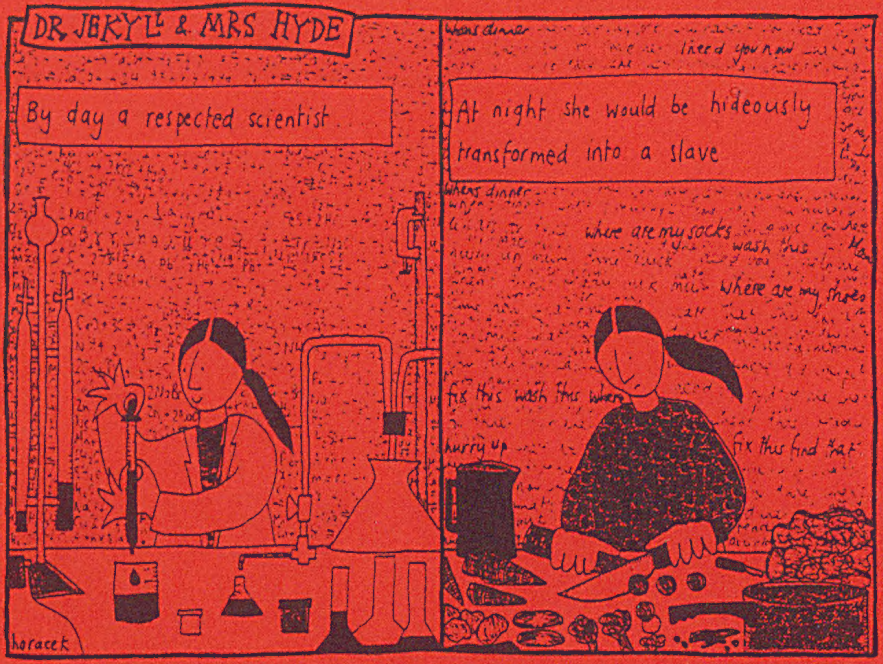
AUSTRALIAN SOCIETY FOR LIMNOLOGY INC

NEWSLETTER


DR JEKYLL & MRS HYDE
By day a respected scientist
At night she would be hideously transformed into a slave
where are my socks
wash this
where are my shoes
fix this wash this where
hurry up
fix this find that
horacek

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MEMBERSHIP DETAILS

The Australian Society for Limnology Inc. (ASL) is an association of over 400 people with professional or amateur interests related to Australian inland waters. Since its inception in 1961, the society has played an important role in fostering limnology in this country. The ASL promotes liaison between limnologists in academic, government and private institutions and has a vested interest in the conservation of aquatic and related resources. Annual conferences are held near centres of limnological interest, and the programme includes scientific sessions, field excursions and social activities.

The ASL regularly produces a newsletter with notes on limnological activities, articles of general interest, book reviews and announcements of upcoming events likely to be of interest to members. Occasionally, it produces a Special Publication series and a Directory of Members.

Membership applications are welcome from any person with an interest in limnology. Five classes of subscribing membership are available:

Ordinary members	$ 25.00
Student members	$ 12.50
Life members	$200.00
Institutional members	$ 30.00
Sustaining members	Fees on application

Membership covers the period from 1 July to 30 June and all members receive the regular and occasional publications produced by the society. Members may also choose to receive the Australian Journal of Marine and Freshwater Science, the Australian Journal of Zoology and/or the Australian Journal of Botany at special reduced rates. The subscription for each journal is based on the calendar year in which the subscription is paid.

Enquiries relating to membership should be directed to the Membership Officer:

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22 Netherby Avenue
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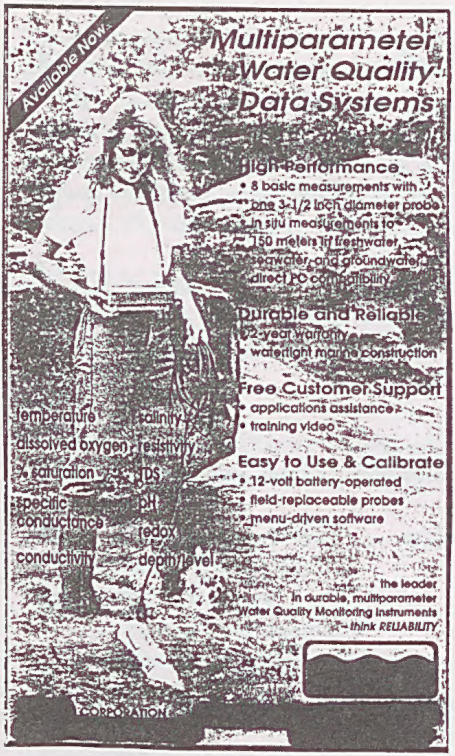
Material for publication in the December issue of the newsletter should be sent to the editors before the 20 of November 1992.

Contributions are welcome on any topic concerned with limnology (or anything else that may be of interest to the readers). Long articles should be forwarded as unformatted text on IBM-compatible discs, or as formatted text in any commonly used word processing package (e.g. WordPerfect, Microsoft Word, Wordstar). All those with Macs, send hard copy or disks to Leon. Contributions on BBC or those other funny computer types are best left alone. E-mail contributions can also be accepted by Leon at Leon.Barmuta@zoo.utas.edu.au. If you don't have access to any of this whiz-bang technology, in desperation, camera ready copy can also be sent. Editorial addresses are given at the end of the last page.

Cover: The cover shows something that we found at the last moment (at this exact pont of production - i.e. the final printout - we haven't worked it out yet)

Editorial

KEEP THE "BIMBO" OUT OF LIMNOLOGY



Every day, we are assaulted, and insulted, by images of sexism in modern culture. From advertising to music videos, from TV shows to magazines to films. A blonde lies seductively accross the bonnet of a new car, promising untold, but clearly implied, sexual delights to the purchaser. Another blonde (or is it the same one? Certainly the same "type") holds a power drill in a way that makes it somewhat obvious what the obviously male purchaser will have (huge genitals) and what he will get (unlimited use of the same). In music, both lyrics and videos, women are constantly paraded, insulted, assaulted, humiliated and exploited. From the 50's tripe of the Beach Boys to the more explicit (and probably dangerous) offerings of modern "musicians" like Ice-T and Tim Dog (see later record review), the images are the same. And from the building site to the boardroom, the view of women is invariably coloured and distorted by such images.

But science is different. Isn't it? Science, of which limnology is but a small sub-plot, relies on intelligence, the power of the mind, for progress and success. And such intelligence is not the sole preserve of a single sex, or any other of those artificial divisions in society (except perhaps for so-called "creation scientists"). Science is the victory of function over form. Where the reliability and accuracy of an idea, a person or a piece of equipment determines whether it is suitable to be applied to a specific problem.

And so it is reflected in scientific advertising. Or so it should be! Imagine the surprise of the editors when, browsing through the library, we came across "Fisheries. A Bulletin of the American Fisheries Society" (1992, Vol 17(2)), and the included ad from the so-called "leader in durable, multiparameter Water Quality Monitoring Instruments" - we have excluded the name so as not to give them any more exposure than neccessary. Sure, the text emphasises the quality of the product, but the image is pure modern advertising.

Some advertising executive, after a long lunch and a short line, must have come up with the idea that such a dull ad wouldn't sell the product. So what do you get - the classic bimbo imagery.

Now we would be surprised if any female would go out in the field to measure *in situ* water quality dressed in such a way: a tight shirt and tighter jeans, short gum-boots (especially in such a turbulent river). Maybe it's different in the US, where the company originates, but we have the sneaking suspicion that reflecting the real world was not what the image in this particular ad had in mind.

And if that's true, then it should be roundly and vocally condemned. We can do without this sort of thing, both in science, and in the world at large. This is the 1990's, for goodness! One would have hoped that science would have risen above such tawdry sexist images and provided women with the true equality they deserve (which it has; except for schooling, employment, promotion and credit ... oh ... guess science has a long way to go).

Minutes from the post-editorial meeting

Ed 1. Pretty hard hitting stuff, eh?
Ed 2. Yeah, but only what they deserve. It's not necessary.
Ed 1. So, what's the next hard-hitting Hinch-with-attitude editorial about?
Ed 2. Don't know. Maybe we should tackle the Rio summit results.
Ed 1. Or how about the destruction of rainforest.
Ed 2. Or crime, or politics, or religion - those creation scientists need a bit of work.
Ed 1. Aah, I know. Let's tackle the corporatisation of limnology in Australia. You know, the bottom-line-dollar-value for research, the competition for funds, the full-cost-recovery-for-research cop out.
Ed 2. Perfect. Then we can use terms like "stupid", "short-sighted", "right-wing think tank", "lack of commitment"....
Ed 1. But not "the clever country", I'm sick of that coming up every time.
Ed 2. Anyway, that's only mentioned when the cleverness ends in export dollars for the economy, you never hear them say "Let's be clever because it's good for society to think about things, even if it makes no money".
Ed 1. OK, let's work on that. Stay tuned folks for what will probably be our last editorial - before we're sacked and sued and have to find alternative employment somewhere.
Ed 2. Another glass of Shiraz, perhaps?
Ed 1. Ah, that 1986 Coonawarra magic. Certainly.
[FX]: Slurp, slurp
Ed 2. Meeting adjourned.

SPLATTER, RUMOUR AND TALL TALES

VICTORIA

Correspondent: Barbara Downes, Dept. of Life, the Universe and Everything, Monash University, Clayton 3168. Phone: (03) 565 5658; FAX: (03) 565 5613

Life at the EPA (according to Leon Metzeling).....

Life continues to be hectic at the EPA. Fiona McKenzie-Smith has fled to Germany for a month after completing (?) her report on fate and effects of biocides in the Ovens River. Maybe she was aiming for Barcelona but missed. Anyway, there are lots of lower Goulburn River and fish farm samples waiting for her when she returns. David Tiller is also planning to escape from the microscope, in this case for two months on his motorbike (it's really a moped, but he calls it a BMW.) around West Australia. He and Fiona had been working on assessing the "health" of the lower Goulburn River when blue-greens bloomed on the river, courtesy of Shepparton Water Board. David in particular has been much involved since then advising EPA. Operations on dilution rates, monitoring, etc. David has also maintained his interest in alpine streams in a study with Alison Pouliot on the effects of sewage effluent discharges from the Falls Creek ski resort into the creek itself. Earlier this year Alison completed her report on the recovery (?) of an urban stream, Darebin Creek, following a fish kill. Leon Metzeling has virtually finished his salinity work - he just has to write up the salinity tolerance testing of some stream invertebrates. Leon has also been working with Fiona on assessing the impact of three fish farms on upland streams. This has proven to be a very tasty project [an observation that can be independently confirmed by one of the editors - *Eds*]. Hopefully, reports on all these studies will be released in the EPA's Scientific Report Series sometime in the future. Graham Rooney coordinates all the above activity as well as being acting coordinator of the marine and toxicological group.

Down the road at the State Water Labs (courtesy Phil Mitchell).....

SHE'S BACK!!!!! Rhonda Butcher has returned to SWL after a 14 month secondment to the Museum of Victoria, working to produce the telephone-book size report "Conservation of Non-Marine Invertebrates in Australia".

HE'S HERE!!!!!! Lance Lloyd has taken up his position as acting Principal Scientist, Water Quality. Previously Lance was with the Limnological Republic of Northern Victoria (Floodplain Ecology Group, DCE, Shepparton). He will be involved with a number of existing and new SWL projects. A recently gained project to undertake a pre-impact assessment of the proposed Upper Yarra Sewage Treatment Works will involve Lance in

some fish work and, along with other SWL personnel (Bennison, Elizer and Pettigrove), on algal and invertebrate studies. An existing DWR/DCE/RWC joint project, the Goulburn Environmental Study, will require input on environmental flow requirements. Lake Mokoan is continuing to loom as a major issue for RWC and Lance is to convene a Research Forum on Lake Restoration (watch you mailboxes for more news), which will tackle some of the problems so clearly evident in this storage. A small project (an EIS) on Quinns Island, Cobram will allow him to keep an eye on the Murray for the next few weeks.

John Dean, who has been employed on a temporary basis since mid-March, is finishing work at SWL at the end of August. John has been counting algae and sorting invertebrate samples. While sorting samples from the EPA Biological Monitoring Network site on the King River upstream of Lake William Hovell, John found some probable nymphs of the baetid mayfly *Bungona*. The only published record for this species is the original type material collected near Sydney in 1957, and this is the first record for Victoria. John is hoping to spend more time working on the taxonomy of Cheumatopsyche and the Leptophlebiidae.

Tanya Rankin has taken up a secondment to the Arthur Rylah Institute, working with Tim Doeg (boo, hiss - the opposition!) [More of this Corporate-inspired "competition" rubbish? - *Eds*]), and Harry Clark is spending seven weeks climbing in the wilds of Bolivia.

Additional news from the Botany group - (1) the phytoplankton monitoring programme of the River Murray is being reviewed. The last report reviewed 5 years of data and the present review will look at the additional 7 years of data since the last report. - (2) Even though the frequency of frantic calls reporting the occurrence of blue-green algae have declined during the winter (colder) months, there are still a few samples coming in with high levels of blue-green algae.

The Phys-Chem group is battling with assorted gremlins in the SWL computer systems. The group has relocated to the refurbished ground floor of the main SWL laboratory building and is still sorting out the bugs in the new computer arrangements. Jo Harrison is working hard at producing a final report for the MDBC/CSIRO/RWC project on nutrients in irrigation drains. Kris Hunter is preparing a report on the water quality of Lake Nillahcootie and Tony Schalken has just completed a report on water-borne nutrients in the Macalister Irrigation District. Meanwhile, resident computer whiz-kid Ross Dunn is getting fit running between PC's and printers trying to trace the missing bytes. Kris and Ross together with Garry Bennison have produced a preliminary nutrient audit for Victoria.....

And so the ritual of science, or something approaching it, marches on. Here at Monash, Sam, Sabine, Gerry and I have been in the throes of writing up papers and writing down

talks. All four of us are going to the Ecological Society of America meetings - in Honolulu, this year and in 4 days time as I write this - and Sam and I are then going on to Barcelona for SIL, as is Ian Bayly. For those of us who've been staying up nights watching the Olympics, Barcelona already seems familiar - however, the arrival of Maria Vazquez, who has come to do a Master's with Sam, has also helped. Maria has been giving us tips about what to eat and places not to go in Barcelona. Meanwhile, she has begun a study on the biology of the hydrobiosids and has begun taking samples from the Cumberland River near Lorne. A new limno Honours student in the lab is Tina Helleren, who is investigating species/area relationships of rock fauna in Lake Purrumbete. Ben Gawne is in the final death agonies of giving birth to his Ph.D. thesis (on the caddis *Agapetus*), and .... well, that's about the news for now. More next time.

At the Museum of Victoria, Richard Marchant has finally been given the OK and funding to go and paddle in the streams in mid-November on Macquarie Island (after promising to wash his nets after each sample). It's just possible that by the time he returns, Museum staff will be residing in an old airplane hanger (that's no joke, unfortunately). Richard and Ian Campbell were filmed by Channel 9 recently, making use of the freeze corer among other things in the Acheron River. Watch out for them on an Earth Quest snippet. Finally, Richard reports that Adrian Pinder has arrived safely in the USA and might begin naming oligochaetes very soon [in fact, he wants specimens now - see later announcement - *Eds*].

Oh, and news from DCE, Freshwater Ecology Section/Branch, Heidelberg campus (one of those old time uncompetitive bunches). Some staff have just survived the trip to the Fish Biology Conference in South Australia (the operative word being <u>just</u>), the highlight of which was the diplomatic development of closer ties with the Queensland contingent. It appears that we might also have to survive a push from the Fisheries Branch/Division Review to snaffle the aquatic scientists back into some new super Fisheries Research Institute, and so, after over 12 months of uncertainty about Departmental Restructures, we have more uncertainty to face in the future (not to mention the upcoming election). However, we continue to try and concentrate on the defence of poor helpless aquatic fauna against the evils of the eco-terrorists.

Work has begun on a survey of the fish fauna of the Mitta Mitta River which will compare the current species composition with that of before the construction of Dartmouth Dam (Hint: If you want to find some good trout water ....). The Silvicultural Systems Project in the Otways has fizzled due to lack (read: premature canceling) of funding (so don't believe all you read in glossy handouts). But a retrospective study of the impact of logging in East Gippsland on fish and invertebrates is about to start. A preliminary study of the impact of weir-cleaning releases in the Upper Yarra has been completed and is being written up. And the survey of the fish and invertebrates of the Yarra River below the Upper Yarra Dam has been completed, and suggested reforms to management strategies

(i.e. release some water!) appear to have been accepted. Murray Cod tracking is still on the go, so don't be surprised to see Freshwater Ecology Staff wandering through the bush with aerials and headphones and black boxes that go beep [Justin O'Connor trying to get the mid-week racing results? - *Eds*]. And we won't mention Dight's Falls at all, will we.

And at the Floodplain Ecology Group (DCE, Shepparton), according to Michelle Jenkins:

There have been a number of changes within the group. Lance Lloyd has moved to the big smoke and is now with the State Water Laboratories of the Rural Water Corporation, Armadale. Brendan Atkins has taken over as acting Team Leader at the moment. Elizabeth Beovich has taken a permanent position with the department in Mildura where she is working on a wide range of issues including wetlands. Marcus Coolong, after doing a great job of pulling together our wetlands bibliography (it now has over 5000 entries), has moved into Liz's science position. He has had the task of analysing the vegetation data collected from our study sites along the Murray and addressing the questions of how flooding frequency and duration affect the different vegetation communities. Andy Warner has also begun a new job within the department although we may not have lost him from the group permanently. I have moved into his role and am currently finishing the Mid-Murray Watering Strategy Project.

Despite all of these changes everything is going along relatively smoothly and we hope to be adding two new faces to the team in the near future to help ease the hectic work load. We are in the process of completing the Integrated Watering Strategy for Murray Wetlands Project (IWS) so that Stage 2, the Implementation of the IWS, can begin on September 1. We have also been involved in a pilot survey of Lake Mokoan with the Rural Water Corporation. This will hopefully lead to funding for work into the restoration of the lake.

Keith Ward has been very busy in Barmah Forest with implementing changes to the management of the forest and wetlands. The group hosted two students from Rusden College, Paul Ryan and Trudi Mullet who spent 9 days in the forest following the cattle around to determine their movements and what they are grazing on. Also an honours student from LaTrobe University, Louise Silvers, has been studying the effects of grazing on fuel loads using exclusion plots. Sharyne Robinson has had the pleasure of accompanying Keith on his field trips to Barmah recently on the back of a go anywhere 4-wheel motorbike (well according to Keith anyway but Sharyne tells a different story).

We have a limited number of copies of our wetland bibliography available for testing but you need to have a copy of PROCITE to use the database. The bibliography is also being published by INFORMIT onto CD-ROM, and will be on sale in this form in the near future.

NEW SOUTH WALES

Correspondent: John Hawking, Murray-Darling Freshwater Research Centre, P.O. Box 921, Albury NSW 2640. Ph. 060-431002, Fax. 060-431626.

University of New England, Armidale

The wetlands lab in the Botany Department at UNE-Armidale is buzzing and it is not even spring yet. Perhaps it will quieten down when the spring germinations take us over completely. This year has seen new faces some of whom have yet to be paraded at an ASL meeting. Our new post-doctoral fellow, Delny Britton, came to us from Jenny Day's lab in Capetown via Canada, USA and her homeland (UK). Delny is busy loading her brain with trivia about wetland seed banks and about Australia and Australians. The seed band investigations have also been boosted by a PhD student, Geoff Smith and an honours student Debbie Blinman but somehow the more we do the more questions we ask so who knows where this all will end.

We manage to keep ourselves entertained by our weekly LaGoon shows with a rotating cast. As well as keeping up to date with what everyone else is, or is not, doing we use this time to pick the brains of anyone else who shows the slightest interest. Recently Bob Haworth from Geography talked to us about the sedimentation history of some of the New England lagoons since European settlement - over one metre of sediment accumulated in these lagoons within a decade of the introduction of sheep and cattle grazing in the 1850's. Rob McCosker and John Duggin from Ecosystem Management discussed the development of a management plan for the Gingham and Lower Gwydir water courses - it isn't easy to satisfy the needs of the wetlands as well as cotton irrigation. John Weir and Peter Jarman, also of Ecosystem Management, told us what they know of two decades of water level fluctuations, water bird use and student projects in local lagoons.

UNE has also been involved in the new TV Open Learning Project, UNE-Armidale and the ABC have been producing the unit The Unique Continent. Malcolm Jones (Resource Engineering), John Weir and Margaret Brock wrote the script for the program on Water and there are other bits of watery interest throughout the series. Some ASL members from places like MDFRC have found themselves being asked if they will be interviewed for the series [hope they show the rotating cast - *Eds*].

Sydney Water Board, Science and Environment

Stream Studies Section has been boosted by the arrival of Debbie Rae (ex James Cook University) and Paul McEvoy (ex Melbourne University). Paul has been working on the effects of trial interbasin water transfers (up to 1700 ML/day) on the benthic invertebrate fauna of the small streams into which the water is discharged. Both he and Debbie will be involved in a forthcoming invertebrate megasurvey of over 100 sites which we hope will be the start of rapid biological stream assessment for the Nepean-Hawkesbury basin.

Meanwhile, most of the rest of the section has been beavering away at computer keyboard or chironomid cookery. Peter Swanson has been busily calculating wet weather loadings in and out of his artificial wetland to work out pollutant removal efficiencies at various flow rates, and Dianne Flett has been doing the same for stream sites on the Kedumba River system to compare the effects of urban runoff and sewage effluent. Michelle Boyd has started fitting models to her dry weather water quality data for the Nattai River to work out how much of the longitudinal decline in nutrient concentrations in the wilderness downstream from Mittagong is due to uptake and how much is due to dilution.

Hugh Jones has started deciphering a mass of Coxs River historic data, some of which goes back to the Hilary Jolly days. (Even some invertebrates from the famous Jolly and Chapman study turned up in a recent clean-up.) Ruth O'Connor has joined the operators of the chironomid crematorium ("We rot them with dignity - and a little KOH"), but Ian Wright has managed to escape temporarily by getting seconded to Customer Liaison. He is believed to have recovered from the shock of receiving an urgent message to contact the head of the Fraud Squad (he wanted some information for his daughter's school project on water pollution).

Department of Water Resources, Sydney

Sitting in this centrally heated building surveying all within my domain, the stream graciously dancing off the Parramatta River (a trace of water was detected in latest sample) the urge to put keyboard to Super VGA monitor came over me. The Department currently has several projects of a limnological flavour up and running.

Firstly, the Department has recently appointed Dr Mick Bales as our resident Senior Biologist. Mick originally from the motherland (another bloody Pom) has come across from CSIRO Griffith. Mick enjoys biomanipulating lakes turning them from an oligotrophic status to a tuna casserole. Mick, thanks to the freshwater crew at Albury, has taken over the reins to monitor invertebrate community structures (in response to agricultural pesticides) as part of the Central & North-western Regions Water Quality Program. The enlargement of Pindari Dam on the Servern River near Inverell is also

keeping Mick busy in obtained baseline information on invertebrate community structures downstream of the Dam.

Hugh Cross, another of our multi-talented environmentalists is determining the relative significance of existing weirs on the Barwon-Darling (upstream of Menindie Weir) to fish passage and to identify management and structural options to redress the situation. The work set down for 1992/93 is likely to be followed by more detailed investigations in 1993/94 at key sites.

Wetlands are also on our plate. Dayle Green (an unfortunate name for any environmental officer) is currently mapping the wetlands associated with intersecting streams ie. Narran & Culgoa Rivers. The Gwydir, Namoi and Lower Darling Valley mapping has been completed with Dayle's next expedition to the Barwon-Darling between Menindie and Mungindi.

Can't tell you too much more, as I'll be exhausted of nail biting and generally stimulating information next time round.

Environmental Consulting Services, BHP Engineering, Sydney

Ross Smith has moved from Papua New Guinea to join a group of scientists in the Environmental Department of BHP Engineering. The department has expertise in risk engineering, site remediation, water/ground water quality, air quality, noise, mine waste minimisation, environmental approvals management, environmental auditing and Ross' own group working on environmental biology. This year the group has been linked with Environmental Technologies Inc., an environmental consulting firm based in Hawaii [Hey, we usually charge for advertising - *Eds*].

Murray-Darling Freshwater Research Centre

The Centre has been successful in obtaining funding for three major projects from the Land and Water Resources Research and Development Corporation. The projects approved are: Nutrient limitation of algal growth: physiological assays and chemical analyses (Rod Oliver); Effects of increased salinity on riverine and water biota (Brian Sorrell); How important are aquatic macrophytes in supporting food webs in wetlands? (Paul Boon and Brian Sorrell).

Brian Sorrell has just returned from Denmark and America. Brian spent four weeks in Denmark working with Dr Hans Brix at the University of Aarhus and then attended the international symposium on "Biology and control of aquatic plants" in Florida. Brian was one of 10 symposium attendees who were invited to participate in a 10 day experimental

workshop to "Investigate the interactions between photorespiratory state and carbon availability and consequent changes in allocation patterns".

Margaret Brock (UNE) visited the Centre to present a seminar on "Aquatic plants in temporary wetlands" and while there spent some time catching up with MDFRC staff. David Cartwright was seen in the taxonomy laboratory identifying caddisflies from the Murray-Darling Basin for John Hawking, and in return John was identifying Alice Wells and Davids' dragonfly larvae from Cape York.

SOUTH AUSTRALIA

Correspondent: Marcus Brownlow, Department of Botany, University of Adelaide, S.A. 5000.

Botany Department

Tertiary treatment of effluent has been a hot topic lately, with George Ganf and Peter Adcock being able to successfully advise the Willunga District Council on the setting up of an aquatic macrophyte-based tertiary sewage treatment system - effectively an artificial wetland. Peter has taken his interest in effluent (something to do with poor potty training as a child?) to the University of Western Sydney where he has just started his mega-pay CRC-based Ph.D. We are all deeply envious, but think of him every time we flush!

LWRRDC has graciously provided the cash for two hefty postgraduate scholarships to further examine the influence of water regimes on aquatic macrophytes in riverine and lacustrine systems. Further information is available from either George Ganf (Botany) or Keith Walker (Zoology).

Finally, we are rejoicing in the commencement of two new honours students (aren't mid-year intakes wonderful!) - Matthew Denton and Kerri Muller. Matthew will examine the regeneration of *Melaleuca halmaturorum* (Tea Tree) under a range of flooding and drying conditions, and Kerri will look at methane production in wetland sediments, jointly supervised by Paul Boon at MDFRC. Paul is currently in Barcelona - he says he's at SIL, but we know that he has really gone to lobby the Olympic Committee to make wader-walking an Olympic event. The Botany Department team is currently practicing at our Bool Lagoon training centre!

Zoology Department, The University of Adelaide

For Andrew Boulton work in the streams of the Flinders Ranges continues apace although it's getting a bit cold there - so cold, in fact, that he had to take a brief trip to Arizona in May-June to warm up again and revisit the infamous Sycamore Creek to confirm the strong parallels between it and the Flinders streams. Apart from cacti, fish and finer sediments at Sycamore, there are marked similarities between the two systems and so he is now working on determining which nutrient is likely to be limiting primary productivity in the Flinders streams (using the old agar-pot technique, Chief!). Andrew also attended NABS in Louisville - an excellent meeting even if he didn't do so well at the volleyball, and lots of good work from those large river buffs. But now the stream ecology lectures have begun in WDW's freshwater course and while he does the SIL thing, its time for Andrew to tell the students there's more to life than salt lakes... [What heresy is this? - *Eds*].

Sam Wade has collected the last of his benthic and drift samples from two artificially silted runs for his Honours work on downstream effects of road crossings in the Flinders Ranges, and now faces a massive pile of bug samples (serves him right for doing that power analysis). Peter Schultz, who grew up in the Flinders Ranges where his old man ran the Parachilna Pub, has just commenced an Honours project investigating the effects of stock grazing and attendant "nutrient input" on the flora and fauna of a variety of permanent and seasonal springs in the northern Flinders. His work will continue over the summer as some of the springs decline in an effort to determine the severity of these impacts.

Keith Walker has just returned from three weeks at the Institute of Ecosystem Studies in New York. He attended the Annual Co-operators Workshop at Hubbard Brook, convened by Professor Gene Likens, and also spent time working with Dr Stuart Findlay and colleagues on the Hudson River. The ecology of the Hudson is about to be recast entirely following the establishment of the Zebra mussel *Dreissena polymorpha*. Keith hopes that some of the IES people will be able to visit Australia at some stage in future so he can return some of their wonderful hospitality. In September (and again in November) he is back to China to visit Qinghai Hu - what a life !!

Bill and Christine Campbell have taken off for the warmer days in Barcelona. They muttered something about SIL but we think canoeing the wild Spanish rivers may have been a priority.

Following the recent discovery of literally truckloads of what we thought was a rare and even possibly extinct aquatic snail *Notopala hanleyi* in irrigation pipelines of the SA Riverland, Fran Sheldon has been lowered into these murky depths on a ladder looking for possible food sources and other clues as to why they prefer the irrigation lines to the

river. This has provided an interesting distraction from what she should be doing - writing, ho hum!

NORTH QUEENSLAND

Correspondent: Paul Clayton, Department of Zoology, James Cook University, Townsville, Qld 4811. Ph: (077) 81 4520; E-mail: zlpdc@marlin.jcu.edu.au

Things are quiet in the North. There hasn't been much rain, temperatures are down, streams are low and most of us have been, or are being, struck down by a particularly nasty virus - probably brought to us by a visitor from the South. Consequently, there is little to report.

Richard Pearson is now the Director of the Australian Centre for Tropical Freshwater Research and Ray Volker has returned to the Civil and Systems Engineering Department. Also, Richard has recently returned from a short visit to Canada to mark a thesis (an external examiner) and to see Ron Davies.

The Dunder project has been wound up (except for the final report) but there is a possibility of further monitoring depending upon funding, etc.. You may not have heard the last of this one! [Pity - *Eds*]

Everything else continues as normal.

WESTERN AUSTRALIA

Special guest correspondent: Nicola Fletcher, B.E.S., Murdoch University, Murdoch, W.A. 6150.

Murdoch University

The quiet slumber of the Wetland Ecology lab was abruptly shattered two weeks ago by the onslaught of Aquatic Management students, chaos now rules supreme! Amidst all the turmoil Declan Morgan managed to expand his sampling programme to encompass the water quality of the Avon River. Obviously the water quality is not too bad, as he managed to complete the Avon Decent [if you thought we were going to correct that spelling error, think again - *Eds*], despite numerous mouthfuls of water, in 16th place in

the K1 section, second in the novice class. If he keeps up his sampling programme who knows, maybe we will see him in Atlanta!

Kerry Trayler has been busy jiggling several short term contracts, tutoring and installing a new Mac. The strange howls and squeaks that emerge from our lab are not due to the human inhabitants, but Kerry's new toy. Lorna Charlton has disappeared off to Milstream for another five weeks sampling, Rumor has it that she has just gone up there to sample the hot weather. She is hoping no more environmental and human induced disasters will befall her on this trip.

Jane Latchford has just commenced a second years field work and is already counting down to the end of the study. Her present lack of enthusiasm is due to the gale force winds, rain and hail which seem to accompany each trip. Roll on summer, PLEASE! The numerous project, honours and masters students associated with the group appear to be busy if the lack of equipment is any gauge.

Arthur McComb, Jane Chambers and Eric Paling are all heading to Colombus Ohio in September to attend INTECOL's Fourth International Wetland Conference.

Water Authority

Shirley Balla has just submitted her PhD thesis entitled 'Managing wetland water and nutrient levels to conserve the aquatic fauna.' A condensed version is available as Volume 5 in the Wetlands of the Swan Coastal Plain series published by the Western Australian EPA and the Water Authority of Western Australia. Anyone wishing to purchase a copy for $12 can contact Shirley Balla ph (09) 420 3242 or by FAX on (09) 420 3176. A broadsheet has also been released on mapping and classification of wetlands of the Swan Coastal Plain for further information also contact Shirley.

University of Western Australia

The aquatic research laboratory has been busy compiling a report on the lakes on the south-coast of W.A. for the Department of Conservation and Land Management. The RGC (formerly AMC) funded wetland restoration project is continuing for the next 3 years. Pete Davies is completing the written component of his PhD and has been offered a position in PNG (the poor bastard!).

TASMANIA

Correspondent: Leon Barmuta, Department of Zoology, University of Tasmania, G.P.O. Box 252C, Hobart, 7001; e-mail: Leon.Barmuta@zoo.utas.edu.au.

University of Tasmania at Hobart

Much rejoicing as blackflies colonized bricks in the icy uplands at Liawenee. As Leon Barmuta now grumpily contemplates some missing data and what may very likely be a confounded split-split plot design, Jean Jackson of caddis-fly fame has ceased her employment and jetted off to France, Ireland and then Macquarie Island. Schemes by her boss to include himself in her hand baggage were foiled, which is why he's still here typing this. David Oldmeadow continues to be gainfully employed, wrestling with artificial streams and coaxing blackflies to colonise some ceramic hemispheres. We actually got the Arts School involved in this and none other than Les Blakebrough (he's very famous) helped Jean and Dave craft these devices: how's *that* for interdisciplinary research?

Inland Fisheries Commission

From Paul Humphries:

Life at Inland Fisheries during the past few months has been very productive. Dave Foster has left the Hydro team to take on a tagging project for NSW fisheries and left in a pall of exhaust, muffled sounds of Def Leppard and reverberating gun shots. Laurie Cook, having finished some pulsating (or is that pulsed?) chlorothalonil artificial stream experiments will attempt to fill Dave's size 11's and also carry on with some work for Peter Davies. Mark Nelson is in the death throes of his sediment work looking at the effects of cable logging on streams in the Dazzler range and is thinking seriously about post grad studies (isn't that a contradiction in terms?). Peter Davies is (at long last) writing up several from a long list projects for publication, including the St Patricks River trout population study and the afore mentioned sediment work. The central highland lake nutrient survey has now been completed and attention is now turning to lakes in the lower Derwent basin amongst others. In addition several IFC bods will be looking at the effects of humic acid on the toxicity of Zn and Cu to trout. Bill Thompson and Stuart Chilcott are just about to begin a 5 year study of the limnology and trout fishery of Lake Sorrell. Finally, biomonitoring the effects of sewage and acid mining is going apace, with our very own Henry Maxwell choosing science over blowing people away (i.e. they didn't want him in the army). Did I say finally? Well, getting back to the productivity.....since the last newsletter, we have had three (yes 3!) births; namely Lili to Peter and Lynn, Isobel to Andrew and Deb and James to Wayne and Tracey. Us workers have been pissed almost constantly since the last newsletter [language, Paul! Almost as bad as the Tim Dog CD

review later in this issue - *Eds*]. Oh and by the way, I'm expecting too! But don't hold your breath. [We weren't intending to; sounds like an interesting birth induction technique anyway - *Eds*].

PAPUA NEW GUINEA

Ross Smith has moved on to BHP Engineering, P.O. Box 1237, North Sydney, 2059. We are pursuing a new correspondent for PNG.

NORTHERN TERRITORY

Correspondent: Peter Dostine, Alligator Rivers Region Research Institute, Office of the Supervising Scientist, Jabiru, NT 0886

The Biological Monitoring section successfully completed the sample collection phase of the Rockhole Mine Creek study in which mine adit water was redirected upstream to examine effects on the macroinvertebrate fauna. Now for the next stage - to unpollute the immediate downstream section and compare rates of recovery between long and short term polluted sections. Peter Dostine is struggling to subdue a large data set on inter-annual variation in benthic macroinvertebrate community structure in the South Alligator River. Five years' worth of chironomid data are bound, gagged, and sitting quietly in the corner. Chris Humphrey is anxious to locate potential Honours candidates for projects on the application of freshwater snails to the testing of mine waste waters. Any takers? Bob Pidgeon was last seen heading for the salt water, fly rod in hand and a determined glint in his eye. Biological Monitoring welcomes their new technical officer, Abbie Spiers.

John Hawking (MDFRC) has submitted his final draft report on the identification of dragonfly larvae from the ARR. Well done John!

The BM section has had a trickle of visitors recently. Dr Satish Choy from the University of Brunei visited the NT in June in pursuit of atyids - he expects to describe several new species and the odd new genus or two from material held by the NT Museum and the ARRRI. Hemipterist Dr Ivor Lansbury from Oxford University was led on a fruitless search for *Goonomdanepa* but was kind enough to identify specimens in our collection of aquatic hemiptera. Dr Mark Harvey interrupted his searchings for interesting terrestrial mites [a contradiction in terms? - *Eds*] to assist BM staff with the identification of water mites.

Greg Rippon, from the Aquatic Toxicology side of the fence, has just returned from a conference on "Environmental Toxicology in SE Asia", held at Salatiga in Central Java, Indonesia. Greg presented a paper entitled "The Development of Toxicity Tests for Tropical Northern Australia to Assess the Environmental Impact of Mining".

NTU Ph.D. student, Michael Douglas is working on the effects of forest burning regimes on woodland streams under the aegis of CSIRO at their Kapalga research station. The project will benefit from a collaborative effort with the NT Power and Water Authority, who will construct flumes to be instrumented with data loggers and automatic samplers.

Kevin Bowland has returned to the Power and Water Authority to head up the water quality Evaluation and Research Section of Water Resources Division. He has just completed three years doctoral research on the limnology of two reservoirs near Mt Isa. A visit from Dr Satish Choy allowed further collaborative work between the University of Brunei and the Water Quality and Evaluation Section on the limnology of Benuatan Reservoir in Brunei.

HOT NEWS JUST OFF THE PRESS!!

Next Years Conference Information

Next years ASL annual Conference/Congress/Oktoberfest will be held at "The Surf Air Resort" [your guess is as good as mine as to how you actually "Surf Air" - *Eds*] in Maroochydore, Queensland, between the dates of Wednesday 14th and Saturday 17th April (1993, that is). According to impeccable sources, the resort is the typical "low cost, slightly daggy accommodation" familiar to regular ASL event-goers. Field trips will be held on the Saturday (17th). Early enquiries and information on the resort name, proximity to the beach, the mean (with 95% confidence limits) wave height in April, the average cost of those monstrous green and orange cocktails with the paper umbrellas in them, and early requests for the "man" at the ubiquitous piano-bar-lounge, can be directed to Brad Pusey at Griffith University.

A METHOD FOR SURVEYING AND CLASSIFYING WETLANDS

By S.V. Briggs. National Parks and Wildlife Service (N.S.W.)
C/- Division of Wildlife and Ecology, CSIRO, Canberra, A.C.T.
FAX (06) 241 3343
9 July, 1992

Introduction

Wetland survey and classification are topics of interest in Australia at present. Many hours of thinking and talking have been devoted to the subject (see article by M. Barson in ASL Newsletter 30(2), June 1992). The major unresolved issues appear to be: (i) which method(s) of classification should be used and; (ii) which attributes should be measured to classify wetlands. In this article I suggest a way to resolve these issues. The method I propose is not new to science, but it is new to wetland scientists in Australia. The system is used extensively by soil scientists and land system surveyors to classify and survey soils, landforms and vegetation in Australia and elsewhere (see McDonald *et al.* 1984, Gunn *et al.* 1988). Wetlands are landforms, and their survey and classification should not be treated differently from the survey and classification of other landforms.

The Concept

The problem with wetland survey and classification is that we cannot classify wetlands until we have surveyed them, and we cannot meaningfully survey wetlands until we have classified them. This problem is the result of doing population surveys of wetlands (i.e. surveying all the wetlands in the area of interest), which forces us to measure a large number of attributes on all wetlands, because we do not know in advance which attributes will be useful for classification. The problem is resolvable by taking a sampling approach to wetland survey and classification, which allows the survey to be separated conceptually from classification.

The Method

A sample of wetlands should be selected from the population of all the wetlands in the area to be surveyed. The sample of wetlands should preferably be chosen randomly, or in a stratified random manner (stratification can be by an already known factor such as source of water, vegetation, geography, climate, etc.). Selecting sample wetlands according to their ease of access or the amount of data already available on them could also be considered. All possible attributes should be measured on the wetlands in the sample.

These attributes (= characteristics) of the sample wetlands should be used to produce a classification system for all the wetlands in the survey area, i.e., for the population of wetlands. My knowledge of multivariate statistics is a little hazy but I think a principal component analysis is the appropriate way to do this. The attributes should be analysed to: (i) place the wetlands in more-or-less discrete categories which will form the classification scheme; and (ii) specify the attributes which define these wetland categories. The results of the analysis of the attributes of the sampled wetlands will thus produce the classification scheme, and define the attributes to be measured on all the wetlands in the study area.

The attributes that are useful for classifying the wetlands should subsequently be measured on the population of wetlands in the study area. Then these wetlands should be classified into their relevant category. Again my knowledge of multivariate statistics is hazy, but I believe that the appropriate way of classifying these wetlands is by discriminant function analysis. The classified wetlands can then be mapped if desired. The steps described here are summarised at the end of this article.

Comments

(i) A type of wetland might occur in the population but not be included in the sample. This can be resolved by re-running the PCA with the new type of wetland included, or simply treat the wetland as an outlier and describe it separately.

(ii) The process described in this article is for surveys of wetlands for resource inventory, i.e., surveys to determine what types of wetland are present, and where they occur. Surveyors of wetlands for other purposes may find a different approach more useful.

(iii) I suggest that the attributes that should be measured on the initial sample of wetlands include salinity (range in salinity levels), size, maximum depth, duration of flooding (days to weeks, weeks to months, months to years, permanently), duration of drying, frequency of flooding, seasonal average air temperatures, annual rainfall and a measure of its variability, groundwater access, rapidity of water level changes, man-made changes, areas, species, height and density of perennial vegetation, area of open water when flooded, soil type, possibly invertebrates, possibly chlorophyll a, possibly nutrients, turbidity, whether a terminal basin or not, size of the stream or river that feeds the wetland, altitude, distance from sea, and geographic location. (See also M. Barson in ASL Newsletter 30(2), June 1992). Land tenure should also be recorded but not used as a classification attribute. I assume that it is feasible to measure this large number of attributes on the sample of wetlands because there is only a relatively small number of them. I also assume that most of the attributes measured on the sample will not be useful for classification, leaving only a small number of attributes which need to be measured on the population of wetlands.

(iv) The method I propose could be tested using data from wetland surveys that are already available. I do not have time to do this myself, but would be keen to talk with anyone interested in investigating the feasibility of the method.

(v) I welcome comments on the above.

References

Gunn, R. H., Beattie, J. A., Reid, R. E. and van de Graaff, R. H. M. (eds.) (1988). *Australian Soil and Land Survey Handbook*. Inkata Press: Melbourne.

McDonald, R.C., Isbell, R.F., Speight, J. G., Walker, J. and Hopkins, M. S. (eds.) (1984). *Australian Soil and Land Survey*. Inkata Press: Melbourne.

Stages to be followed in survey and classification of wetlands for resource inventory.

(i) Select sample of wetlands in the survey area (small to continental scale);

(ii) Measure all the attributes that might be useful in classifying the wetlands in the study area;

(iii) Put the attributes for the individual wetlands through a (?) PCA to classify the wetlands into categories, and determine which attributes distinguish these categories;

(iv) Measure these distinguishing attributes on the rest of the wetlands in the survey area (the population of wetlands);

(v) Use discriminant function analysis to place the rest of these wetlands into their appropriate category;

(vi) If desired, map the classified wetlands.

ANNOUNCEMENTS

Australian Journal of Marine and Freshwater Research
Proposed Special Issue

Cyanobacterial Research in Australia

The following is an extract from a proposal received by the journal:

"It has been proposed that a Special Edition of the Australian Journal of Marine and Freshwater Research be published that establishes the contemporary status of cyanobacterial research in Australia. That Special Edition would consist of a collection of scientific papers that:

- explore the phenomenon of cyanobacterial blooms through case studies
- provide details of recent research into the ecology, taxonomy, toxicity, bloom development and control, and effects of cyanobacteria, and
- describe the significance of cyanobacteria in water resource management.

"By bringing these papers together in one volume it is hoped to produce a valuable reference for scientist, working either in this field or in related fields with some interest in cyanobacteria, and the non-scientist (e.g. engineers, managers and decision makers) involved in the water industry. It is likely that the Special Edition will also be available as a monograph allowing wide dissemination of the information in Australia and overseas.

"Some boundaries have been determined to contain the scope of the Special Edition. The causal aspects of cyanobacteria are very open and could include issues such as agricultural practices etc. To keep the volume well focussed, it has been decided to limit the edition to papers dealing directly with recent research on cyanobacteria in Australia."

If you wish to submit a paper for inclusion in this special issue, please send three copies of your manuscript to Ann Grant, Managing Editor, AJMFR. PO Box 89, East Melbourne, Vic 3002, from whom copies of the journal's Instructions to Authors can be obtained. **The deadline for submissions is Friday 27 November 1992.** Acceptance of papers will depend on the outcome of the normal process of peer review. Authors are asked to ensure that papers have a general scientific basis and are not too applied.

REQUEST FOR SPECIMENS

The freshwater oligochaete taxonomy project, funded by the ABRS and supervised by Dr Ralph Brinkhurst of the Aquatic Resources Centre in Tennessee, USA, is now in full swing. Adrian Pinder is currently working in Tennessee for one year before returning to the Museum of Victoria for the remainder of the project.

The end product of the project will be a published key to the Australian freshwater oligochaete fauna, the usefulness of this key and accuracy of the distribution information will be determined in part by the extent of the material examined by the authors.

We are interested in hearing from anyone who has freshwater oligochaete specimens or will be collecting them in the near future. Material from both larger surveys and smaller collections will be welcome, although initially a listing of the available material would be preferred. Precise locality data (lat/long or grid references) would also be useful. Specimens or information can be sent directly to Adrian Pinder at the Aquatic Resources Centre at this address:

Aquatic Resources Centre
P.O. Box 680818
Franklin 37068-0818
Tennessee, USA
ph (615) 790 0172, FAX (615) 790 0173

The CITES reference number for sending specimens to the ARC can be obtained from Adrian Pinder or Richard Marchant at the Museum of Victoria.

CONFERENCES, WORKSHOPS ETC

** New Entries

**** Ecotones at the River Basin Scale: Global Land/Water Interactions. UNESCO MAB Program: Ecotones Project, Ecotones Regional Workshop, Australia, October 12-15 1992.** Will be held in Barmera, S.A. and includes sessions on floodplains, groundwater, riparian forests, the effects of large animals, and the control of nutrient inputs. Contact: Anne Jensen, S.A. Department of Environment and Planning, ph (08) 207 2099; FAX (08) 207 2090. [Okay, organisers, here's an editorial gripe. This looks like a workshop that a lot of our membership would have liked to know about *before* this second circular (which was passed on to us by another member). So how about putting us on your mailing list, eh? - *Eds*].

** **Wetland Systems in Water Pollution Control, 29 November - 3 December 1992, Sydney, N.S.W..** Using macrophytes and wetlands to control pollution. Contact: Lance Bowen, Centre for Wastewater Treatment, UNSW, P.O. Box 1, Kensington, N.S.W. 2033.

** **International Conference on Environmental Biometrics, 14-15 December 1992, Sydney, Australia.** Topics include environmental monitoring, assessment and prediction of change, statistics in environmental health, sampling and analysis of environmental data. Abstracts to: Dr J.C. Evans, Water Board, PO Box 73, West Ryde 2114. Organiser: Dr Walter W. Piegorsch, U.S. National Institute of Environmental Health Sciences, P.O. Box 12233, Research Triangle Park, NC, U.S.A. FAX 1-919-541-7843.

** **Southern Temperate Ecosystems: Origin and Diversification, 18-22 January 1993, Hobart, Tasmania.** A conference on the evolution, biogeography and sustainability of southern ecosystems, not just *Nothofagus*. Contact: Dr R.S. Hill, Plant Science, University of Tasmania at Hobart, GPO Box 252C, Hobart, Tas 7001; ph (002) 20 2601; FAX (002) 20 2698; e-mail: Bob.Hill@plant.utas.edu.au.

** **Sustainable Forestry in Australia: Future Directions, 7-10 February 1993, Armidale, N.S.W..** A Maurice Wyndham Conference that will include a session on "Forest Values", of which water is one. Contact: Mrs Jean Seppelt, New England Conference Management, UNE, Armidale 2351; ph (067) 73 2539; FAX (067) 73 2769.

** **First ANZ Meeting on Quaternary Dating, 8-11 February 1993, Canberra.** The title says it all. The first of a biannual series to catch up on the latest methods and their glitches. Contact: Mrs J. Papps, R.S.Pac.S., ANU, GPO Box 4, Canberra, ACT 2601; ph (06) 249 4764; (06) 249 0738.

** **The Ecological Basis for River Management, 23rd-26th March 1993.** An international symposium on river management covering water quality and quantity, fish stocks, amenity & recreation, the natural environment, and catchment land use. Contact Dr David Harper, Ecology Unit, Department of Zoology, University of Leicester, Leicester LE1 7RH, England.

** **Towards Biodiversity and Conservation, 12-16 July 1993, Brisbane Qld.** Call for papers on the conservation and diversity of invertebrates including protists. This biodiversity conference promises to emphasise invertebrate issues as well as the more usual ones. Contact: Dr Glen Ingram, Queensland Museum, PO Box 3300, South Brisbane, Qld 4101.

Aquifers at risk: towards a national groundwater quality perspective, 15-17 February 1993, Canberra; organised by ANU & BMR. CONTRIBUTIONS invited. Contact Shirley Kral, ANU Centre for Continuing Education, GPO Box 4, Canberra 2601, ph (06) 249 4580, FAX (06) 257 3421.

1st Society of Environmental Toxicology and Chemistry World Congress, Lisbon, Portugal, 28-31 March 1993. Conference theme: Ecotoxicology and environmental chemistry - a global perspective. Contact: Prof. Dr. A.M.V.M. Soares, Department of Zoology, University of Coimbra, 3049 Coimbra Codex, Portugal; FAX +351-39-24-226.

Asian Wetland Symposium October 15-20 1992, Lake Biwa Research Institute, Japan. Contact ILEC Secretariat, 3-4-22 Kyomachi, Otsu, Shiga 520, Japan. FAX +775-23-1581.

The 5th International Lake Conference on the Conservation and Management of Lakes, Stresa, Italy, (northern) spring 1993. Organised by ILEC (International Lake Environment Committee Foundation). Contact R.M. Societa di Congressi s.r.l., Via Ciro Menotti 11, 20129 Milano Italy.

3rd International Congress on Medical and Applied Malacology, Camden, N.SW., 19-23rd October 1993. There will be three general symposia: 1. Economic, medical and veterinary aspects of parasites; 2. Molluscs and agriculture; 3. Aquaculture of molluscs. One of the proposed excursions is to a "Fluke Infested Property". Contact Phil H. Coleman, Division of Invertebrate Zoology, Australian Museum, PO Box A285, Sydney South, N.S.W. 2000; phone (02) 339 8112; FAX (02) 360 4350.

Nominations called for 1992 Asahi Glass Foundation Blue Planet Prize for significant accomplishments in environmental studies. There are two categories: academic for "extremely advanced and highly original scientific or technical breakthrough" and development and implementation for "executing environmental projects, establishing and introducing environmental policies, concluding programs and conducting environment-related writing or media activities". Prize includes ¥50 million. Contact The Asahi Glass Foundation, Bank of Tokyo Building 12F, Marunouchi 1-4-2, Chiyoda-ku, Tokyo 100, Japan.

Other Exciting Newsletters and Journals Department:

!! ROTIFER NEWS !!

Rotifer News is a newsletter for amateur and professional workers on rotifers (Leon, these are verily tiny creatures which sometimes are found epizoic on the nits on a gnats nuts). The newsletter was started in the early 1970's by John Gilbert at Dartmouth College in New Hampshire as an informal means of communication, exchange of methods, requests for references, material, etc. John's graduate students continued the newsletter on a yearly or twice-yearly basis until 1991 (#19), when the incumbent editor, Bob Wallace, at Ripon College in Wisconsin, stepped down. A group of attendees at the 6th Int. Rotifer Symposium in Banyoles, Spain (June 1991) elected to keep Rotifer News in production. The present editorial 'committee' has regional editors in Argentina (2), Australia, Austria, Denmark, England, Poland, Scotland, South Africa & U.S.A., with Russ Shiel at MDFRC the production editor.

The newsletter has survived its translocation to Australia; #20 and #21 have been produced at MDFRC, with 2-3 issues a year proposed, depending on subscriptions, correspondence, etc. The newsletter has been sent to anyone who requested it in the past, regardless of whether they donated some defrayment of production and mailing costs. Because of mailing cost increase resulting from the move, a suggested donation of $US5.00 yr^{-1} could be made.

All those interested are asked to contact Russ, perhaps with a bit more enthusiasm than for the bibliography (see later) at MDFRC, PO Box 921 Albury NSW 2640.

!! INTERNATIONAL JOURNAL OF SALT LAKE RESEARCH !!

Rivetting new journal on saline lakes. Boy, would we editors get into trouble if we didn't give prominent publicity to this one:

Published by Gleneagles Publishing, a wholly Australian enterprise. (ISSN 1037-0544)

This new journal covers original papers or reviews on any topic of chemical, physical, biological, geological, geochemical or hydrological interest to salt lake researchers. Contributions on conservation, management and ecological topics will also be considered. The Editor-in-Chief advises that all contributions will be refereed, and that the rejection rate is around 35%. All submissions should be in English, and those whose first language

is not English will have their papers treated sympathetically. There are no page charges, 50 reprints are supplied free to authors, and manuscripts can be submitted on IBM-compatible disk. A quick browse through indicates the editorial quality is very high: clear, consistent typeface, good quality paper, excellent reproduction of black and white photos and graphics. The first issue is 116 pages long, and a personal subscription is US$25.00 (US$50.00 for institutions). Manuscripts can be sent to the Editor-in-Chief, Prof. W.D. Williams, Department of Zoology, University of Adelaide, GPO Box 498 Adelaide S.A. 5001. Subscriptions should be sent to Gleneagles Publishing, PO Box 41, Glen Osmond, S.A. 5064. **If anyone would like to review this new publication for the Newsletter, please contact the editors.**

The first issue includes papers on predicting equilibrium concentrations of dissolved oxygen, bacterial activities in the Dead Sea, faunal descriptions of the Aral Sea, saline lakes in British Columbia, and saline streams in Victoria. Bisexual populations of *Artemia* get a guernsey, as does Lake Balkhash in Kazakhstan. International indeed!

Tropical Freshwater Biology is a relatively new international journal that wants your contributions and subscriptions. According to the pamphlet "the papers are of high quality. Therefore, Journal of Tropical Freshwater Biology (TFB) will be an extreme additional asset to all libraries". Further information from the Editor-in-Chief, Dr G. Idodo-Umeh, 52 Ewah Road, PO Box 3441, Benin City, Nigeria. Subscriptions are £11.00 per issue plus £2.00 for airmail.

Catchments is a new newsletter "prepared for the informed decision maker- YOU". It seems to cover estuarine and coastal issues with little bits on non-athalassic stuff too. The first issue had a strong NSW bias, but there was a nationwide roundup of bits an pieces culled from government, university and industry sources. Could be a good way of keeping up with the proliferating acronyms surrounding the bodies managing aquatic resources. Subscriptions are $25.00 for 1 year (11 issues) or $40.00 for 2 years (22 issues) from the Institute for Coastal Resource Management, University of Technology Sydney, Westbourne Street, Gore Hill 2065.

Blue-green (cyanobacteria) buffs will be delighted by a new newsletter with a title that is such an awful pun that your editors cannot bring themselves to reproduce it. More importantly, if you work on, are affected by, or are just plain interested in cyanobacteria then you should be on the mailing list of the AWRC Algal Bloom Research, c/- DWR, 35 Spring Street, Melbourne 3000.

NEW BOOKS ETC.

The Biology, Conservation and Management of Australian Freshwater Crayfishes: A Bibliography (1991). Compiled by John R. Merrick. This handbook (48 pp.) lists over 500 published works on the identification, diversity, evolution, ecology, physiology, feeding, reproduction, growth, conservation and management of Australian freshwater crayfishes. Available from J. Waddington, Graduate School of the Environment, Macquarie University, North Ryde, NSW 2109 (ph: (02) 805 7976) at $13.00 each (+$1.00 p&p).

Wetland information from Western Australia. The Water Authority is in the process of publishing information about Perth wetlands, and they have a very nice colour poster too. If you wish to find out more and/or be put on their mailing list contact Shirley Balla at the Authority, phone: (09) 420 3242 or fax (09) 420 3176. [See also the W.A. Prattle, Rumour and Scuttlebutt - *Eds*]

Water Allocation for the Environment: Proceedings of an International Seminar and Workshop published by Centre for Water Policy Research, UNE, Armidale is now available. Cost $50.00 from the Administrative Assistant, Centre for Water Policy Research, UNE, Armidale 2351.

BOOK REVIEWS

Flora of New Zealand: Desmids. Volume II.

By H. Croasdale and E.A. Flint, pp. i-x, 1-147; 34 plates of line drawings, 16 colour plates of habitats. Botany Division, DSIR, Christchurch. NZ$57.50 including postage.

Reviewed by Professor Peter Tyler, Deakin University, Warrnambool.

The first volume of this intended three part series was reviewed in New Zealand Journal of Marine and Freshwater Research 20 in 1986. The second volume follows on with much the same format, and deals with the placcoderm genera *Actinotaenium, Cosmarium, Cosmocladium, Spinocosmarium,* and *Xanthidium*. Sixty five of the 147 text pages, and all but six of the 34 plates are taken up with the difficult genus *Cosmarium*. As with the first volume, the taxonomic descriptions of most taxa are accompanied by notes as to ecological preferences. This is probably valuable data within New Zealand but should be extrapolated to other countries with caution - one has only to recall the case of *Stephanosphaera* on either side of La Manche, as perverse as chicory and endive.

The taxonomic tenor of this work is conservative, with a nebula of species defined on minute morphological criteria. Of course, this is the way with desmidiologists, as with those who study diatoms or the silica-scaled chrysophytes. However, the renegades who question the validity of species, or even genera, so minutely typified, should not look askance, for it is only by such careful denomination of a group of organisms that a better understanding of them will come. It is timely that the major reviews of North American and European desmid floras are being completed. This can only assist in a better picture of desmid biogeography, which does not exist, despite the cosmopolitanism of many taxa.

However, the great strength of regional floras, such as this one, is that they bring confidence to local users, particularly those who have not themselves made a lifelong study of desmids. However good the iconographic match between a specimen from Wakitipu and one in a Russian book, it is reassuring to identify from a New Zealand publication. And in this case, great confidence can be derived from the happy coincidence of authorship, one with a lifetime's review of the global characters of desmid species. The taxonomic opinion on New Zealand desmids must be regarded as authoritative. Nonetheless, a valuable feature, for experienced and inexperienced workers alike, is the leavening of terse descriptive prose with hints and tips of the type "the species is best recognised from the seven little pimples curving down to the isthmus".

The many line drawings are clear and informative, but very few depict New Zealand material, mostly being "after" a string of well-known old authors. Nonetheless, they form a major resource of the book because only the most disciplined of workers will struggle through the dichotomous keys, improved since Volume I, before flipping through the pictures to narrow down the options quickly.

A charming feature of Volume II is the scattering of biographical resumés of the phycologists, mostly European but including the resident Maskell, who have previously studied the N.Z. desmid flora, and of Ralfs, the contentious starting point for desmid nomenclature. The book is moderately priced but cost could be further reduced by omission of the colour plates of New Zealand lakes, a feature of this volume and the first in the series. While this reviewer gladly pays the price and devours the plates, the add nothing to the matter of desmids.

It is likely that anyone interested in New Zealand desmids would buy Volume I as well as Volume II and therefore the considerable repetition of material, such as locality maps, lists of stations sampled, tables of ecological data, and the key to genera reported from New Zealand, could have been omitted, at a further saving in cost.

The book is printed in Christchurch, generally to a high standard though there are a few curiosities, like the inclusion of text and pictures of some varieties which have not been reported in New Zealand, like the lack of reference to page numbers of Volumes I and

II in the key to genera, despite the provision of a column for such an entry, and retention of the galley 000's in the key to genera for this volume.

All in all, the book is a valuable addition to the world literature on desmids and the steady pace of work of this magnitude, and its generally high standard, are a credit to a country of rather few people. Their Gondwanan cousins across the Tasman Sea await Volume III anxiously, with great curiosity as to how the labyrinth of *Staurastrum* will fare.

Statistical Methods in Water Resources.

By D.R. Helsel and R.M. Hirsch, Studies in Environmental Science Series 49. Elsevier. 1992. Approx. $230.

Reviewed by Peter Davies, Inland Fisheries Commission, Hobart

Skewed is Sexy !

This is, in my umble opinion, a must-read for all budding and even well fruited limnos. It starts from the premise a) that we all have skewed data, b) that little data actually fits a normal distribution and c) that there is actually no divine reason why it should in the first place - funny that. Well if this sounds nauseatingly familiar to all of you out there struggling to log transform the quirks out of your data sets with fifty zeros and a couple of 1000's, then this book is your answer. It says:

- Transformations are not the godsend that we naive dolts think they are - you can overtransform.
- Non-parametric tests are frequently more powerful - several times so in fact - than parametric tests for skewed data.
- You can't adequately test for normality with small data sets.
- Most computer packages use normal approximations for non-parametric tests that are inappropriate for small data sets.
- There are alternative methods for regression which avoid the frequently undetected pull of outliers on least squares regressions.
- That medians and quartiles are generally much better descriptors of a data set's central tendency than the good old mean and standard deviation.

> That, despite all we have learnt, ANOVA's and t-tests ARE sensitive to skew and that given the poor performance of transformations, non-parametric equivalents are far more powerful.

It just goes on and on. Many of you probably think you've heard this all before, but being a borne-again non-parametric median convertee I can recall many examples of statistics inappropriately used in various fishery and limnological seminars in recent years that indicates that the lessons are not being learnt - or even perhaps taught [Bet you thought we hadn't noticed the "borne" bit - *Eds*]. Arrogant bastard, I hear you mutter.

The book is written by two statisticians from the USGS. It is eminently readable (I read it mostly in bed - did wonders for my sex life!). It gives cogent examples dear to all our hearts - yes there are even several data sets with mayflies in them! Worked examples of river flows, water quality data - all sorts of homey limno stuff lie herein. There is a good chapter on how to test differences between sets of data which go something like < 0.1 ppm, < 0.1 ppm, < 0.1 ppm , 25 ppm, < 0.1 ppm - sound familiar? It also deals with trend analysis, discrete relationships and regressions and graphics. The cover's a nice green and has some fish on it. Please excuse the attention grabber, my enthusiasm got the better of me.

It's great - devour it!

LIMNOLOGY BIBLIOGRAPHY 30(3)

In response to Peter Gehrke's comments in Newsletter 30 (1): the success, usefulness or otherwise of the Bibliography depends on the members sending their papers, facsimiles thereof, or lists of publications. There already is someone putting it in electronic storage - me! Because so few members send their publications this is not an onerous task, but it means that the Bibliography is not representative of ASL members' productivity. I offered to curate the Bibliography while Russ Tait was cleaning rocks in Anchorage (he's back, by the way....) I also offered the complete Bibliography (such as it is, now ca. 600 entries) on disk or printout in May 1989 (Newsletter 27(2))....the response was underwhelming - not a single interested limno. raised its head.....what's the point?....you may well ask.....

Just for interest, this is the breakdown by years:

1981 (started with 9 entries); 1982: 63; 1983: 68; 1984: 62; 1985: 77; 1986: 52; 1987: 45; 1988: 88; 1989: 58; 1990: 32; 1991: 31; 1992: 16.

Do we have a statistician (or clairvoyant) who would like to prognosticate on this trend? [Russ Shiel, MDFRC, PO Box 921 Albury NSW 2640]

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WELCOME TO NEW MEMBERS

Any non-members out there who happen to spot this whilst browsing through one of the library subscibers (or while perusing the contents of a colleague's desk), and would be keen to see their name in print in such an august little journal as this: It's easy! Just join us here at the wonderful ASL and, for the modest annual fee, we will print your name right here on this page in the next issue. Impress your friends! Don't delay! Join now! The address is on the inside of the front cover. But wait! That's not all! You also recieve your own personal copy of the newsletter every time it comes out (no more sneaking around)! Not to mention the steak knives and the little plastic gizmo that dices, slices and julliennes.

So it's welcome to:

Ms Michelle Deaker
Wamboin NSW

Dr Gustaff Hallegraeff
Department of Plant Science
University of Tasmania
Hobart TAS

Mr Shafiqul Hassan
Scientific Services
Sydney Water Board
Sydney South NSW

Mr Mark Lintermans
Bungendore NSW

Mr Stephen Mackay
Biology Department
Queensland University of Technology
Brisbane QLD

Mr Alexander Mikov
Northcote VIC

Mr Geoff Smith
University of New England
Armidale NSW

Mr Evan Turak
Department of Entomology
Australian Museum
Sydney NSW

Dr Vitay Valecha
Scientific Services
Sydney Water Board
Sydney South NSW

CHILDREN'S PAGES

We hearby present the following record review, published in the "Age" of 29 May 1992. One of the editors wishes to point out that the production mentioned in this article has absolutely nothing whatsoever to do with him. Readers can win a prize if the can decipher the acronym NWA (hint: we believe it has something to do with an American musical (?) combo) - An ASL Albury Congress mug to the first correct answer, and two ASL mugs to anyone who actually owns a recording of the said NWA.

4 Friday 29 May 1992

IT'S YOUR MONEY

ANDREW MASTERSON

THE word for today, gentle comrades, is bombastic. It is best employed in phrases such as "bombastic, crotch-grabbing idiocy".

With this in mind, our first artist is Tim Dog. Mr Dog is a large, aggressive, bejewelled chap from the Bronx. His first album, the subject of considerable hype in the US, is called 'Penicillin On Wax' (Columbia). Judging by the 20 (yes, 20) tracks on it, his world view can be summed up neatly by the following statements. Mr Dog is tough. Mr Dog hates NWA. Mr Dog has an enormous willy and likes to put it about a bit.

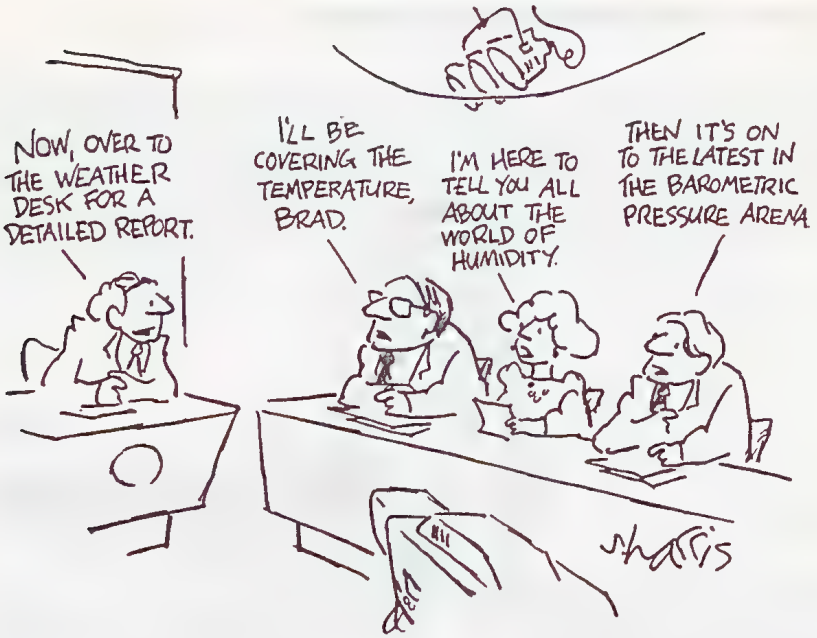
Mr Dog's method of communication relies heavily on two words. One of them is "mother". The other one isn't.

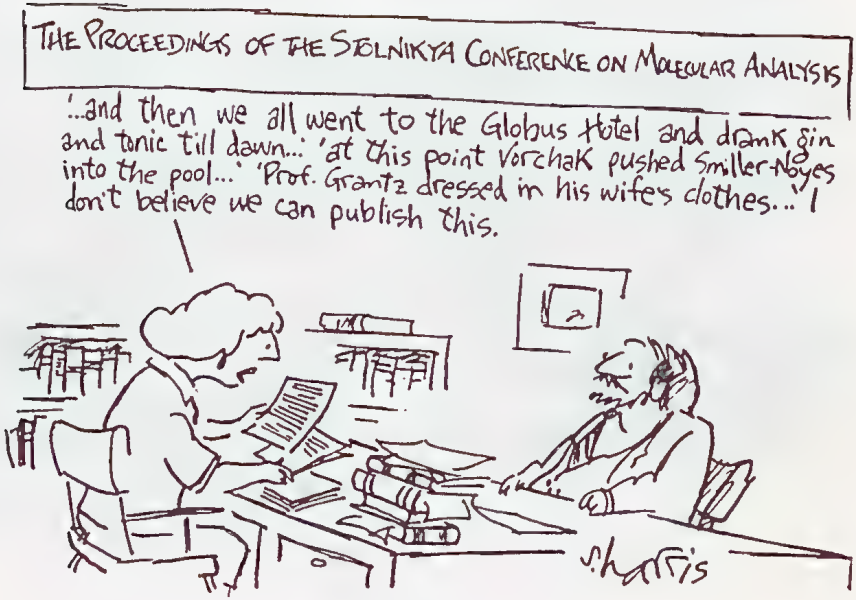
To sustain the contention that Tim Dog is the newest articulation of black American alienation, as the record company would have us believe, is impossible. Rappers such as NWA, Public Enemy and Ice-T have endowed the form with musical, lyrical and political credibility but Tim Dog sounds like an ignorant thug, a self-important man trying unsuccessfully to appear perceptive.

The tracks rumble along on a stock-standard drum and bass track, topped by uninspired scratching and cliched ooh-ahh samples. On cuts with titles such as 'Low Down Nigga', 'F—— Compton' and 'You Ain't Shit', he denounces black-on-black violence and then threatens to beat everyone up. He tells us NWA are ideologically unsound because one of them allegedly punched his girlfriend, and then describes his own act of subjecting a woman to anal sex before urinating in her face.

Music is a broad chapel admitting all sinners but, sorry, this album contains no redeeming features whatsoever. It is an obscenity: an oafish, empty, distasteful profanity. Stick with NWA.

From a book by Sidney Harris called "You want proof! I'll give you proof!":


NOW, OVER TO THE WEATHER DESK FOR A DETAILED REPORT.
I'LL BE COVERING THE TEMPERATURE, BRAD.
I'M HERE TO TELL YOU ALL ABOUT THE WORLD OF HUMIDITY.
THEN IT'S ON TO THE LATEST IN THE BAROMETRIC PRESSURE ARENA
sharris


THE PROCEEDINGS OF THE SIOLNIKYA CONFERENCE ON MOLECULAR ANALYSIS
'..and then we all went to the Globus Hotel and drank gin and tonic till dawn...' 'at this point Vorchak pushed Smiller-Noyes into the pool...' 'Prof. Grantz dressed in his wife's clothes...' I don't believe we can publish this.
sharris

GENUINE EXAMPLES OF HSC EXAM ANSWERS

1. Charles Darwin was a naturalist who wrote the Organ of the Spices.
2. Three kinds of blood vessels are arteries, veins and caterpillers.
3. The dodo is a bird that is nearly decent now.
4. To remove air from a flask, fill the flask with water, tip the water out, and put the cork in quick.
5. A litre is a nest of young baby animals.
6. The process of turning steam into water again is called conversation.
7. A magnet is something you find in a bad apple.
8. The school is ventilated by hot currents.
9. The earth makes a resolution every twenty-four hours.
10. The cuckoo does not lay its own eggs.
11. To collect fumes of sulphur, hold a deacon over a flame in a test tube.
12. Typhoid fever may be prevented by fascination.
13. Parallel lines never meet unless you bend one or both of them.
14. Algebra was the wife of Euclid.
15. Algebraic symbols are used when you do not know what you are talking about.
16. Geometry teaches us to bisex angels.
17. An axiom is a thing that is so visible that it is not necessary to see it.
18. A circle is a line which meets its other end without ending.
19. The moon is a planet just like the earth only deader.
20. The pistol of a flower is its only protection against insects.
21. An example of animal breeding is the farmer who mated a bull that gave a great deal of milk with a bull with good meat.
22. English Sparrows and Starlings eat the farmer's grain and soil his corpse.
23. By self-pollination, a farmer my get a flock a long-haired sheep.
24. If conditions are not favourable bacteria go into a period of adolescence.
25. Dew is formed on leaves when the sun shines down on them and makes them perspire.
26. Vegetative propagation is the process by which one individual manufactures another individual by accident.
27. Sea water has the formula CH_2O.
28. A super saturated solution is one that hold more than it can hold.
29. A triangle which has an angle of 135^0 is called an obscene triangle.
30. The hydra gets its food by descending upon its pray and pushing it into its mouth with its testacles.
31. Blood flows down one leg and up the other.
32. The cerebrum is a cavity in the head.
33. A person should take a bath once in the summer time and not quite as often in the winter.
34. When you haven't got enough iodine in your blood you get a glacier.
35. For fainting: Rub the person's chest, or if a lady, rub her above the hand.
36. For fractures: To see if the limb is broken, wiggle it gently back and forth.
37. For dog bite: Put the dog away for several days. If he has not recovered, then kill it.
38. For nose bleed: Put the nose lower than the body.
39. To remove dust from eye: Pull the eye over the nose.
40. For head colds: Use an agonizer to spray nose until it drops into your throat.
41. For snake bite: Bleed the wound and rape the victim in a blanket for shock.
42. For asphyxiation: Apply artifical respiration until the patient is dead.

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